CLAIMS

1. A method for driving a liquid crystal device including a first transparent substrate and a second transparent substrate that face each other, a liquid crystal filled between the first and second transparent substrates, a first transparent electrode formed on a surface of the first transparent substrate that faces the second transparent substrate, and a second transparent electrode formed on a surface of the second transparent substrate that faces the first transparent substrate, the method comprising the steps of:

applying a first driving signal of a square-wave voltage to the first transparent electrode and applying a second driving signal of a square-wave voltage to the second transparent electrode; and

where the first driving signal has a voltage amplitude V1, a frequency F1, and a duty ratio D1, the second driving signal has a voltage amplitude V2, a frequency F2, and a duty ratio D2, and a phase difference between the first driving signal and the second driving signal is indicated by ϕ,

controlling a refractive index ΔN of the liquid crystal by adjusting the phase difference ϕ in a state where V1 = V2, F1 = F2, and D1 = D2 so as to vary an effective voltage to

be applied to the liquid crystal.

2. A method for driving a liquid crystal device according to claim 1, wherein the voltage amplitudes V1 and V2 of the first and second driving signals are adjusted so that the refractive index ΔN changes in a substantially linear range relative to the phase difference ϕ between the first and second driving signals.

3. A method for driving a liquid crystal device according to claim 1, wherein the liquid crystal device is disposed on an optical path between a light source of an optical head and a recording surface of an optical disk, the optical head emitting a light beam from the light source onto a land and a groove that are formed on and in the recording surface and detecting reflected light from the land and the groove; and the refractive index of the liquid crystal of the liquid crystal device is controlled to compensate for an optical phase difference generated between the reflected light from the land and the reflected light from the groove.

4. An apparatus for driving a liquid crystal device including a first transparent substrate and a second transparent substrate that face each other, a liquid crystal filled between the first and second transparent substrates, a first transparent electrode formed on a surface of the first transparent substrate that faces the second transparent substrate, and a second transparent electrode

formed on a surface of the second transparent substrate that faces the first transparent substrate, the apparatus comprising:

voltage application means for applying a first driving signal of a square-wave voltage to the first transparent electrode and applying a second driving signal of a square-wave voltage to the second transparent electrode; and

control means for, where the first driving signal has a voltage amplitude V1, a frequency F1, and a duty ratio D1, the second driving signal has a voltage amplitude V2, a frequency F2, and a duty ratio D2, and a phase difference between the first driving signal and the second driving signal is indicated by ϕ, controlling a refractive index ΔN of the liquid crystal by adjusting the phase difference ϕ in a state where V1 = V2, F1 = F2, and D1 = D2 so as to vary an effective voltage to be applied to the liquid crystal.

5. An apparatus for driving a liquid crystal device according to claim 4, wherein the voltage amplitudes V1 and V2 of the first and second driving signals are adjusted so that the refractive index ΔN changes substantially linearly relative to the phase difference ϕ between the first and second driving signals.

6. An apparatus for driving a liquid crystal device according to claim 4, wherein the liquid crystal device is disposed between a light source of an optical head and a